CLAIMS

What is claimed is:

1.   A method for processing messages in a mobile communications
network, the method comprising:

    (a)   receiving, at a first network node, a first message relating to a
communication in a mobile communications network, the first
message including a called party identifier, the first message
being destined for a mobile services node in the mobile
communications network;

    (b)   analyzing information in the first message to determine whether
number portability processing is required for the first message;

    (c)   in response to determining that number portability processing is
required for the first message, performing a lookup in a first
database based on the called party identifier to determine
whether the called party has been ported out of an area serviced
by the mobile services node;

    (d)   in response to determining that the called party has been ported
out of the area serviced by the mobile services node, analyzing
information in the first message to determine whether a reply is
required for the first message; and

    (e)   in response to determining that a reply is required for the first
message, formulating the reply based on information extracted
from the first database.

2.   The method of claim 1 wherein receiving a first message includes receiving a signaling system 7 (SS7) signaling message.

3.   The method of claim 2 wherein receiving an SS7 signaling message includes receiving an Internet protocol-encapsulated SS7 signaling message.

4.   The method of claim 1 wherein receiving a first message includes receiving a send routing information (SRI) signaling message.

5.   The method of claim 1 wherein receiving a first message includes receiving a session initiation protocol (SIP) signaling message.

6.   The method of claim 4 wherein generating a reply message includes generating a SRI acknowledge (SRI Ack) signaling message.

7.   The method of claim 1 wherein receiving a first message includes receiving a short message service (SMS) signaling message.

8.   The method of claim 1 wherein the called party identifier includes a mobile subscriber ISDN (MSISDN) number.

9.   The method of claim 1 wherein the called party identifier includes a telephone number associated with a wireline network subscriber.

10. The method of claim 1 wherein the called party identifier includes an electronic mail (email) address.

11. The method of claim 1 wherein the called party identifier includes an

5   Internet protocol (IP) address.

12. The method of claim 1 wherein analyzing information in the first message to determine whether number portability processing is required includes examining a translation type (TT) parameter.

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13. The method of claim 1 wherein analyzing information in the first message to determine whether number portability processing is required includes examining a global title indicator (GTI) parameter.

15   14. The method of claim 1 wherein analyzing information in the first message to determine whether number portability processing is required includes examining a numbering plan (NP) parameter.

15. The method of claim 1 wherein analyzing information in the first

20   message to determine whether number portability processing is required includes examining a nature of address indicator (NAI) parameter.

16. The method of claim 1 wherein performing a lookup in the first database includes performing a lookup in the first database based on a mobile service entity type in the first message.

5   17. The method of claim 15 wherein the mobile service entity type indicates a home location register.

18. The method of claim 15 wherein the mobile service entity type indicates a short message service center (SMSC).

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19. The method of claim 1 wherein analyzing information in the first message to determine whether a reply is required for the first message includes examining a transaction capabilities application part (TCAP) or mobile application part (MAP) operation code parameter in the first

15 message.

20. The method of claim 1 wherein generating a reply message using information extracted from the first database includes using a routing number (RN) value obtained from the first database.

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21. The method of claim 1 wherein performing a lookup in a first database includes performing a lookup in an exceptions-based routing database having entries that are exceptions to ranges of called party identifiers.

22. The method of claim 20 comprising in response to failing to locate an entry corresponding to the called party identifier in the first database, performing a second lookup in a second database based on the called party identifier, wherein performing a lookup in the second database

5 includes performing a lookup in a range-based routing database having entries corresponding to the ranges of called party identifiers.

23. A routing node for processing messages in mobile communications network, the routing node comprising:

10 (a) a communication module for receiving a first message destined for a mobile services node and relating to a call in a mobile communications network, the first message including a called party identifier;

(b) a first database containing entries corresponding to called party
15 identifiers, the entries each including information as to whether number portability processing is required for call signaling messages and information as to whether a reply is required for the call signaling messages; and

(c) a database controller for determining, based on the information
20 in the first database, whether number portability processing is required for the first message, and, in response to determining that number portability processing is required for the first message, determining whether a reply is required for the first message, and in response to determining that a reply is required
25 for the first message, formulating the reply.

24. The routing node of claim 23 wherein the communication module includes a signaling system 7 (SS7) message transfer part (MTP) capable link interface module (LIM).

5 25. The routing node of claim 23 wherein the communication module includes a transmission control protocol / Internet protocol (TCP/IP) – transport adapter layer interface (TALI) capable data communication module (DCM).

10 26. The routing node of claim 23 wherein the first database comprises an exception-based database and each entry in the exception-based database is an exception to a set of default routing rules.

27. The routing node of claim 26 comprising a range-based database
15 containing entries corresponding to ranges of called party identifiers wherein each entry in the exception-based database contains a called party identifier or range of called party identifiers that do not fall within any of the called party identifier ranges in the range-based database.

20 28. The routing node of claim 27 wherein the database controller searches the exception-based database, and, in response to failing to locate an entry in the exception-based database, searches the range-based database.

29. The routing node of claim 23 wherein the first message is a send routing information (SRI) message.

30. The routing node of claim 23 wherein the first message is a session initiation protocol (SIP) message.

31. The routing node of claim 23 wherein the first message is a short message service (SMS) message.

32. The routing node of claim 23 wherein the reply is an SRI acknowledge (SRI Ack) message.

33. The routing node of claim 23 wherein the database controller determines whether number portability processing is required by examining at least one of a translation type (TT), global title indicator (GTI), numbering plan (NP), and nature of address (NAI) parameters in the first message.

34. The routing node of claim 23 wherein the database controller generates the reply in response to determining that the first message requires a reply by the mobile services node.

35. The routing node of claim 23 wherein the first message that is associated with a called party that has been ported out of the routing node's local service area.